

REMARKS

The Applicants respectfully request reconsideration and allowance.

Claims 1-26 are pending. Claims 1-15 stand rejected; claims 16-26 have been withdrawn pursuant to a restriction. Claim 1 is the only independent claim, and the applicants generally focus their patentability arguments on claim 1. However, the applicants respectfully request that the merits of each claim be independently assessed.

Claim 1 is amended to recite microfluidic in both the claim preamble and the claim body. The claim preamble is also amended to include “integrated microfluidic chip.” The claim body also now specifies that the channels are “formed from a polymer layer.” Support for this Amendment can be found at, for example, the title (“Integrated surface-machined...”); Figure 1 (“Integrated microfluidic chip...”), paragraph 6 (“total integration of many microfluidic devices”), paragraph 11 (“polymer based layer”) and paragraphs 34 – 51 and other places throughout the specification (citations from publication of application, US 2004/0188648 A1 published September 30, 2004). If the Examiner has any additional questions about support, a telephone interview with the undersigned is respectfully requested.

The Applicants have responded to the Examiner’s objections to the drawings.

Rejections under 35 U.S.C 102 (e)

Claims 1-12 were rejected under 35 U.S.C 102(e) as being anticipated by Cabuz et al. US 6,837,476 (Cabuz). The applicants respectfully traverse, particularly in view of the present Amendment. Cabuz does not anticipate the present claims because, among other things, they recite a first and a second *microfluidic* channel which are not described by Cabuz. Also, the present claims recite that the channels are formed from polymer layers which also is not described by Cabuz. For example, the elements 11 and 13 in Cabuz Figure 1 are not polymer layers. Hence, Cabuz cannot anticipate, and this rejection should be withdrawn.

Rejections under 35 U.S.C 103 (a)

In the office action, the Examiner cited two references as a basis for an obviousness rejection, Cabuz and US Patent No. 5,971,355 (Biegelson). The applicants respectfully

traverse. The two cited references do not render these claims obvious, whether considered alone or in combination.

The applicants, as recited in claim 1, have invented among other things an integrated microfluidic chip (see claim preamble). The integrated chip is integrated because of surface micromachining elements on a single substrate and, in particular, polymer layers. The problem facing the inventors related to development of multilayer surface micromachining technology for better integration of microfluidic devices (see Background of Invention section of specification). The cited references do not focus on addressing this problem which weighs in favor of non-obviousness.

In brief, Cabuz taken alone describes an electrostatically actuated valve but does not describe an integrated microfluidic chip or microfluidic channels. Cabuz describes conventional assembly methods, not surface micromachining. Moreover, Cabuz does not describe or suggest microfluidic devices or channels. For example, Figure 1 illustrates a lower body portion (11) and an upper body portion (13) which does not provide an integrated structure. The summary describes “mounting” the diaphragm in the chamber (col. 1, line 47). Hence, it does not describe an integrated chip. Cabuz does not provide or suggest the polymer layers. Cabuz does not suggest the presently claimed invention.

Taken alone, Biegelson describes valve arrays and a fluid transport apparatus. It does not describe the “polymer based diaphragm with an orifice” as recited in the office action (page 6). It does not help one to better integrate microfluidic devices. It does not focus on microfluidic devices. Hence, Biegelson also does not suggest the presently claimed invention.

The combination of Cabuz and Biegelson (or Biegelson and Cabuz) also does not render the claims obvious and can be only done with hindsight. For example, Cabuz relates to wireless applications which are remote to the applications of Biegelson. Neither reference particularly relates to the other or to the problem facing the inventor. Other reasons exists for no motivation to combine. For example, insertion of the diaphragm of Biegelson, with no opening, in place of the Cabuz diaphragm, with opening, would destroy the function of the Cabuz teaching. Hence, one skilled in the art faced with the problem facing the inventors would not combine these references to arrive at the claimed invention.

In sum, no motivation to combine references is present in the record, particularly in view of the present claim amendments. *Prima facie* obviousness has not been established.

The Office is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

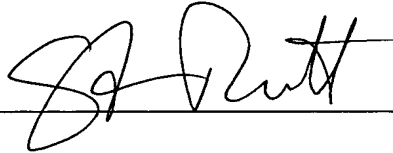
The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date January 27, 2006

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By

A handwritten signature in black ink, appearing to read 'J. Steven Rutt', is written over a horizontal line.

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Amendments to the Drawings:

The drawing sheet containing Figure(s) 1, 2A, and 2B is being presented as a replacement sheet to be substituted for the previously submitted drawing sheet. Figures 2A and 2B have been amended. Reference designations 222, 224 have been included in Figure 2A. Reference designation 230 has been rewritten legibly. In addition, Figures 2A and 2B have been rehatched for clarity. Also for clarity, the descriptors in Figures 2A and 2B have been removed. Descriptions of the reference signs can be found in the specification.